

WO 2005/073685

PCT/GB2005/000358

10

Claims

1. A linear sensor comprising electrically conductive textile fibres and electrically insulating textile fibres, said sensor comprising at least two conductive elements having electrically conductive textile fibres and electrically insulating textile fibres spaced to separate said two electrically conductive elements when no pressure is applied to said sensor and to allow electrical conduction between said two conductive elements under the application of pressure.
2. A sensor according to claim 1 in which a first one of said conductive elements is surrounded by a second one of said conductive elements.
3. A sensor according to claim 2 in which said second conductive element is surrounded by a sheath.
4. A sensor according to any preceding claim comprising a woven, knitted or braided textile structure.
5. A sensor according to any one of claims 1 to 4 in which said insulating textile fibres are woven, knitted or braided.
6. A sensor according to any one of claims 1 to 5, wherein one of said conductive elements has a woven, knitted or braided structure.
7. A sensor according to any one of claims 1 to 6, wherein the

WO 2005/073685

PCT/GB2005/000358

11

conductive fibres of one of said conductive elements and insulating fibres are woven, knitted or braided together.

8. A sensor according to any one of claims 1 to 7 in which a first one of said conductive elements is surrounded by a second one of said conductive elements having conductive fibres forming a woven, knitted or braided structure.

9. A sensor according to any one of claims 1 to 8 configured such that an electrical potential is established across one of said conductive elements and a potential is measured at a different one of said conductive elements.

10. A sensor according to claim 9, wherein a data item representing a potential measurement is periodically sent to a data processing device.

11. A sensor according to any preceding claim further comprising elastic fibres and wherein at least one conductive element comprises a substantially elastic structure.

12. A sensor according to any preceding claim comprising a first conductive element, a second conductive element and a third conductive element, said first conductive element disposed between and electrically insulated from said second and third conductive elements, said sensor configured to allow electrical connection between said first conductive element and one of said second and third conductive elements.

WO 2005/073685

PCT/GB2005/000358

12

13. A sensor according to any preceding claim, wherein said at least two conductive elements comprise

a first conductive element having electrically conductive textile fibres extending along at least a portion of the length of said sensor; and

a second conductive element having electrically conductive textile fibres extending along at least said portion of the length of said sensor, and said sensor further comprises a third conductive element extending along at least said portion of the length of said sensor,

wherein said third conductive element is electrically insulated from said first and second conductive elements over said portion of the length of said sensor, and said third conductive element is electrically connected at one end to only one of said first conductive element and said second conductive element.

14. A sensor according to claim 13, wherein said third conductive element and said first conductive element or said second conductive element are electrically connected at a first end of said sensor, and said sensor has electrical terminals for applying electrical potentials and/or measuring an electrical potential located only at the second end of said sensor.

15. A sensor according to claim 13 or 14, wherein said third conductive element is located within a solid insulating sleeve.

16. A sensor according to any one of claims 13 to 15, wherein said insulating sleeve is surrounded by electrically conductive textile fibres of said first conducting element.

WO 2005/073685

PCT/GB2005/000358

13

17. A linear sensor comprising electrically conductive textile fibres and electrically insulating textile fibres: said sensor comprising

a first conductive element having electrically conductive textile fibres extending along the length of said sensor;

a second conductive element having electrically conductive textile fibres extending along the length of said sensor and surrounding said first conductive element; and

electrically insulating textile fibres configured to (i) separate said two electrically conductive elements when no pressure is applied to said sensor and (ii) allow electrical conduction between said two conductive elements under the application of pressure.

18. A sensor according to claim **17** in which said insulating textile fibres are woven, knitted or braided.

19. A sensor according to claim **17** or **18**, wherein one of said conductive elements has a woven, knitted or braided structure.

20. A sensor according to any one of claims **15** to **18** in which a first one of said conductive elements is surrounded by a second one of said conductive elements having conductive fibres forming a woven, knitted or braided structure.